

REMARKS

This is a full and timely response to the outstanding Office Action mailed August 27, 2007. Claims 1-40 are pending in the application. Claims 1 and 14-39 have been withdrawn from consideration. Claims 2-12 has been herein amended. Claim 13 has been canceled herein without prejudice or disclaimer. Claim 40 is newly added. Applicants respectfully request that the amendments being filed herewith be entered and request that there be reconsideration of all pending claims.

Applicants gratefully note the Examiner's acknowledgement of Applicants' election of claims 2 and 3-13.

In the Specification

The disclosure is objected to since allegedly in the specification (page 15, line 14) the silicone atoms in $-\text{O}-\text{Si}-\text{R}^8-\text{Si}-$ have open valencies. Applicants traverse this objection.

Applicants note that exemplary structures having group Q ($-\text{O}-\text{Si}-\text{R}^8-\text{Si}-$) are shown in the specification (page 17, structures I – K), wherein the open valencies are clearly shown as available for cross-linking with other components of the polymer structures.

Accordingly, Applicants have amended the appropriate paragraphs to more clearly show the valencies available for cross-linking. The amendments to each of the paragraphs does not present new matter. Thus, the objection to the specification should be withdrawn.

In the Claims

Claims 3 and 12 have been corrected to delete the typographical errors therein of two " $-\text{O}-\text{PO}_3\text{H}_2$."

Claim 10 has been objected to as being in improper dependent format for allegedly failing to limit the subject matter of a previous claim. Claim 10 is

amended herein to depend from claim 2, thereby limiting a previous claim. The objection to claim 10 is therefore rendered moot.

Claim 12 has been objected to as being in improper dependent format for allegedly failing to limit the subject matter of a previous claim. Claim 12 is amended herein to depend from claim 2, thereby limiting a previous claim. The objection to claim 12 is therefore rendered moot.

35 U.S.C. § 112 Rejections

Claim 2 has been rejected under 35 U.S.C. 112, first paragraph. The Examiner allegedly was not able to find a basis in the specification for a fuel cell that lacks a catalyst.

Applicants have herein amended claim 2 to delete the reference to 'does not include...a catalyst' This rejection is therefore rendered moot, and Applicants respectfully request that this rejection be withdrawn.

Claims 3-6 and 8-13 have been rejected under 35 U.S.C. 112 as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention.

The Examiner asserted that in claims 3 and 10, it was not clear as to what "A" refers to.

Claims 3 and 10 have been amended herein so that "A" refers to "an inorganic acid functional group." Support for this amended claim language can be found in the specification at, for example, page 9, line,21; page 12, lines 15-16; page 14, lines 9 and 16, and page 15, line 8. The amendments to claims 3 and 10, therefore, now render this rejection moot.

The Examiner stated that in claim 12 the silicones in $-O-Si-R^8-Si-$ have open valencies.

Claim 12 is herein amended to indicate that the silicones are available for cross-linking with other monomers or chains of the polymers of the present disclosure. The amendment to claim 12 is fully supported in the specification at page 17, wherein examples of backbone units that have substituents 'Q' clearly

having silicone valencies available for cross-linking are illustrated. The amendment to claim 12 now renders this rejection moot.

The Examiner asserted that it was not clear in claim 13 as to whether Applicants intended to claim a membrane or a fuel cell. Claim 13 is herein canceled and this rejection is therefore rendered moot.

Claim 40 is newly added. Support for this claim is present in original claim 2 and in the amended "summary."

35 U.S.C. § 102 Rejections

Claims 3-9 and 13 were rejected under 35 U.S.C. 102(b) as allegedly being anticipated by *Honma340* (US 2003/0003340). Claim 13 has been canceled herein and the rejection with regard to this claim is, therefore, now rendered moot. Applicants respectfully traverse this rejection with regard to claims 3-9.

The amended claims 3-9 of the present application are drawn to a fuel cell comprising a flexible proton electrolyte membrane having the characteristic of a proton conductivity of about 1×10^{-6} to 1×10^{-1} S/cm at a temperature range of about 30°C to about 180°C and a relative humidity of about 0% to 100%; with the proviso that the fuel cell does not include a humidifier, and a thermal management system for controlling the temperature in the fuel cell. The cited reference *Honma340* does not disclose, teach or claim a fuel cell that does not include a humidifier or a thermal management system.

The Examiner (Office Action at page 6, lines 3-6) asserted that *Honma340* "discloses a flexible proton electrolyte membrane comprising a hybrid inorganic-organic copolymer network derived from the components A), B), and C). Component A) can be tetraalkoxysilanes, etc." However, *Honma340* does not teach, disclose or suggest any of the hybrid inorganic-organic copolymer networks disclosed in the present application. The tetraoxysilanes taught by *Honma340* are mere precursors used in the synthesis of the membranes disclosed by *Honma340*, and not the backbone units of the polymers claimed in the claims 3-9 of the present disclosure.

It is axiomatic that "[a]nticipation requires the disclosure in a single prior art reference of each element of the claim under consideration." *W. L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983). Therefore, every claimed feature of the claimed invention must be represented in the applied reference to constitute a proper rejection under 35 U.S.C. § 102. Applicants, therefore, respectfully request that the rejection of claims 3-9 be withdrawn.

Claims 3-11 were rejected under 35 U.S.C. 102(b) as allegedly being anticipated by *Honma138* (US 6,680,138). Applicants respectfully traverse the rejection with regard to claims 3-11.

The amended claims 3-11 of the present application are drawn to a fuel cell comprising a flexible proton electrolyte membrane having the characteristic of a proton conductivity of about 1×10^{-6} to 1×10^{-1} S/cm at a temperature range of about 30°C to about 180°C and a relative humidity of about 0% to 100%; with the proviso that the fuel cell does not include a humidifier, and a thermal management system for controlling the temperature in the fuel cell. The cited reference *Honma138* does not teach a fuel cell that does not include a humidifier or a thermal management system having a flexible proton electrolyte membrane according to the present application.

The Examiner (Office Action at page 6, lines 3-6) stated that *Honma138* "discloses a flexible proton electrolyte membrane comprising a hybrid inorganic-organic copolymer network derived from the components A), B), and C). Component A) can be exemplified as bis(triethoxysilyl)polyisobutane,etc."

However, *Honma138* also does not teach, disclose or suggest any of the hybrid inorganic-organic copolymer networks disclosed or claimed in the present application. The bis(triethoxysilyl)polyisobutane and related compounds disclosed by *Honma138* are mere precursors used in the synthesis of the membranes taught by *Honma138*, and not a specific backbone unit(s) of the polymers of the fuel cells as claimed in claims 3-11 of the present disclosure.

It is axiomatic that "[a]nticipation requires the disclosure in a single prior art reference of each element of the claim under consideration." *W. L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983). Therefore, every claimed feature of the claimed invention must be represented in the applied reference to constitute a proper rejection under 35 U.S.C. § 102. Applicant, therefore, respectfully requests that the rejection of claims 3-9 be withdrawn.

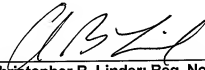
CONCLUSION

In light of the foregoing amendments to the claims and specification and for at least the reasons set forth above, Applicants respectfully submit that all objections and/or rejections have been traversed, rendered moot, and/or accommodated. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested.

Furthermore, any and all findings of well-known art and official notice, or statements interpreted similarly, should not be considered well known since the Office Action does not include specific factual findings predicated on sound technical and scientific reasoning to support such conclusions.

If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

Respectfully submitted,



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